DISTRIBUTIONAL RECORDS FOR CHELONIANS FROM NORTHEASTERN INDIA[1]

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(With a text-figure)

Distributional records for 10 species of chelonians, based primarily on collections from the northeastern states of Assam and Meghalaya have been presented. These include: Emydidae- *Pyxidea mouhoti*, *Cuora amboinensis*, *Melanochelys tricarinata*, *M. trijuga*, *Geoclemys hamiltonii*, *Kachuga smithii*, *K. sylhetensis*, *K.tentoria*, Testudinidae-*Manouria emys* and Trionychidae-*Lissemys punctata*

INTRODUCTION

The chelonian fauna of the northeastern states of India (Fig. 1) comprises at least 17 species, belonging to 3 families (Table 1). Much of the existing knowledge on the distribution of the group in the region is based on collections that are decades old, scattered in several museums. Literature concerning the region's turtles and tortoises is scanty. Those solely dealing with north eastern India, published in the present century include Chaudhury (1912), Talukdar (1979), Vijaya (1983) and Das (1987).

The present account describes the notable records of turtles and tortoises discovered during a recent (January-February and June- July 1988) survey in the states of Assam and Meghalaya, undertaken by me and supported by the IUCN/WWF. A description of the survey will be found in the final project report (Das 1988).

METHODS

Turtles and tortoises were collected during the survey either by hand or in tangle-nets set in water or from forest villages. At the Manas Tiger Reserve, the chelonian collections made by Mr. S.K. Sarma, Forest Range Officer, Bansbari, were examined. In addition, material at several museums was verified.

The following museum acronyms have been used: BM(NH): British Museum (Natural History), South Kensington, London, England. MHNG: Museum Histoire Naturelle, Geneva, Switzerland. ZSI: National Zoological Collection, Zoological Survey of India, Calcutta, India. ZSI/ER: Zoological Survey of India, Eastern Regional station, Shillong, India.

All material referred to in subsequent sections, except those in the MHNG have been personally verified. ID/NE refers to my north eastern India field number and material collected during the above survey are being deposited at the ZSI.

Nomenclature follows Iverson's (1986) most recent checklist. Scute terminology used are those suggested by Zangerl (1969).

Two or more of the following measurements were taken on each specimen dealt with subsequently:

1. Straight carapace length (SCL): For emydids and testudinids, cervical at carapace midline to posterior edge of 12th marginal; for trionychids, from the cervical, along the medial region to the posterior tip of flap, taken with dial vernier calipers for specimens upto 20 cm, and with steel tape for those exceeding this length.

TABLE 1
LIST OF CHELONIANS RECORDED FROM THE NORTHEASTERN STATES OF INDIA

EMYDIDAE		
1.	*Pyxidea mouhotii*	Assam, Meghalaya, Arunachal Pradesh
2.	*Cyclemys dentata*	Assam, Meghalaya
3.	*Cuora amboinensis*	Assam, Nagaland
4.	*Melanochelys trijuga*	Assam, Nagaland
5	*Melanochelys tricarinata*	Assam, Arunachal Pradesh
6.	*Geoclemys hamiltonii*	Assam, Meghalaya
7.	*Morenia petersi*	Assam
8.	*Hardella thurjii*	Assam, Meghalaya
9.	*Kachuga smithii*	Assam
10.	*Kachuga tecta*	Assam
11.	*Kachuga tentoria*	Assam
12.	*Kachuga sylthetensis*	Assam, Meghalaya
13.	*Kachuga dhongoka*	Assam
TESTUDINIDAE		
14.	*Indotestudo elongata*	Meghalaya, possibly Assam
15.	*Manouria emys*	Assam, Manipur, Meghalaya , Nagaland
TRIONYCHIDAE		
16.	*Lissemys punctata*	Assam, Meghalaya
17.	*Trionyx hurum*	Assam

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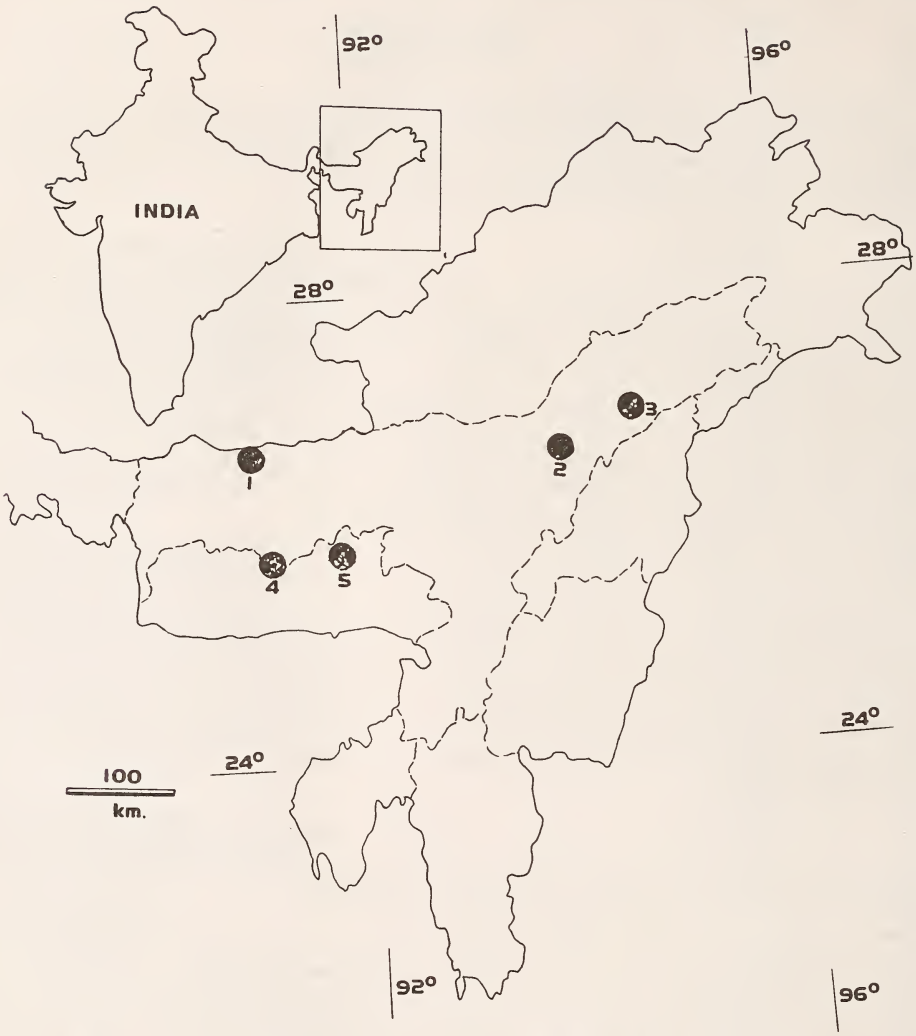

Fig. 1. Map of northeast India, showing localities cited in the text.
Assam: 1. Manas; 2. Kaziraga; 3. Sibsagar; Meghalaya; 4. Ranikor; 5. Nonghyliem.

2. Curved carapace length (CCL): Taken with a flexible tape.
3. Straight carapace width (SCW): Distance across widest part of carapace, perpendicular to longitudinal body axis, taken with dial vernier calipers for specimens up to 20 cm, and with steel tape for those exceeding this length.

EMYDIDAE

1. **Keeled box turtle** *Pyxidea mouhotii* (Gray1862)

In a recent review of the distribution of this little – known species (Das 1987), I mentioned that, based on museum specimens, it is positively known from the Garo hills of Meghalaya and Deban, Tirap (presently Changlang) district of Arunachal Pradesh, with a possible record from Cachar, Assam, BM (NH) 98°12° 20° 1, registered as from 'Eastern

Assam hills, probably North Cachar, near Barail Range.

Since then I have obtained the following information: Three specimens have been recorded as collected from the Cachar hills by Anderson (1871) and evidently two of these were from the Kapili river of the North Cachar hills. All were presented to the Asiatic Society by Maj. H.H. Godwin-Austin handwritten comments, together with the initials 'J.A.' (= John Anderson?) on blank page between pages 10 and 11 of Theobald (1868) in the library of the ZSI. The zoological collections of the Asiatic Society of Bengal, in 1875, was transferred to the Indian Museum, and in 1916 the collection was handed over to the ZSI, but the 3 North Cachar hills specimens of *Pyxidea mouhotii* cannot be located at present.

2. **Malayan box turtle** *Cuora amboinensis* (Daudin 1802)

Material: 2 examples, from Kaziranga National Park, Golaghat district, Assam. ID/NE 02 : SCL 21.6 cm, CCL 25.3 cm, SCW 14.8 cm. ID/NE 09 : SCL 20.9 cm, CCL 25 cm, SCW 14.3 cm. Both collected by me in January–February 1988.

Moll and Vijaya (1986) reported on a specimen belonging to this species in the collection of the ZSI (Reg. 16690), from Mangaldai, Darrang district, Assam.

The present records further confirm the occurrence of *Cuora amboinensis* in northeastern India. In addition to the Kaziranga material, 3 more examples collected from Manas Tiger Reserve, Barpeta district, Assam, by Mr S.K. Sarma, were verified. An example of the present species, from the 'Gela Bil river, Jorhat, Assam' is reported to be in the collection of the MHNG (Reg. 1557.15). 'Bils' in the region, however, refers to large bodies of standing water.

Anderson (1872a) recorded the species from Samagooting in the Naga hills, now in Nagaland, but this record is not supported by a museum specimen.

3. **Tricarinate hill turtle** *Melanochelys tricarinata* (Blyth 1856).

6 examples of this poorly known emydid were seen at Manas, which were collected from the Bansbari grasslands (Sarma, pers. comm.), within the Tiger Reserve. The distribution given for the species by Smith (1931) is Bisnath plain, Assam; Dafla hills, presently in Arunachal Pradesh; Jalpaiguri district, northern West Bengal and Chaibassa, now in Singhbhum district, Bihar. The ZSI has collections from the localities mentioned in addition to one (Reg. 18391) listed as from 'a few miles from Sonarpur, Assam'.

Moll and Vijaya (1986) collected the species from near the Nepal border in West Champaran district, Bihar, and saw photos of the turtle taken in Nepal's Chitawan National Park. The species has also been reported from Corbett National Park, Nainital and Garhwal districts, Uttar Pradesh by Frazier (1986). There are, in adddition, published records of *Melanochelys tricarinata* from Bangladesh – Mymensingh district (Khan 1982a, 1982b and 1987), Dinajpur (Khan 1982b) and the Cox's Bazar–Teknaf region of Chittagong (Khan 1987). The record of the species from the Sunderbans of West Bengal by Mukherjee (1975) is surprising and erroneous. At Manas, 2 of the captive turtles laid one large egg each on the open ground, in November, but both were broken possibly by the turtles themselves (Sarma, pers. comm.). One of the broken eggs were examined by me and found to be large in size, with a thick, brittle shell. Moll (quoted in Dinerstein *et al.* 1987) believed clutch size in the species to be between 1–3.

4. **Indian black turtle** *Melanochelys trijuga* (Schweigger 1814)

Material: A nearly complete carapace from Lailad village, Nongkhyllem Reserve Forest, East Khasi hills, Meghalaya. Reportedly caught from the adjacent Umtru river. Collected by me in June 1988. ID/NE 18:SCL *c.* 20.5 cm, CCL *c.* 25 cm, SCW 15.8 cm.

To this species, I assign an incomplete carapace, put together from a cluster of disarticulated bones discovered on the roof of a shed in Lailad village, where in the past, it was used as a feeding bowl for dogs. Subspecific allocation is not possible, as the 5 races that are currently recognised are differentiated primarily by their head colorations and the locality falls approximately halfway between the known ranges of the subspecies *indopeninsularis*: northern India and possibly Bangladesh and Nepal, and *edeniana*: almost throughout Burma (Das 1985, Iverson 1986). The Manas records, a collection of 7 individuals made by Mr. S.K. Sarma, had long, black

spear-shaped marks on the foreheads, diagnostic of *indopeninsularis*. This extends the range of the subspecies into Assam.

The subspecies *indopeninsularis* was given a rather restricted distribution by Smith (1931), 'Chota Nagpur and Jalpaiguri district, N. Bengal!' Mol! and Vijaya (1986) collected it from West Champaran district of Bihar. Dinerstein *et al.* (1987) recorded *Melanochelys trijuga* from western and central Nepal and though a subspecific allocation was not made in either case, *indopeninsularis* seems to be the race involved.

5. **Spotted pond turtle** *Geoclemys hamiltonii* (Gray 1831).

Material: 8 examples, shells and entire specimens, from forest camps and large ponds in Kaziranga National Park, Golaghat district, Assam. ID/NE 04 : SCL 16.6 cm, CCL 18.9 cm, SCW 11.0 cm, ID/NE 06: SCL 32.3 cm, CCL 36.6 cm, SCW 19.6 cm, ID/NE 10: SCL 21.6 cm, CCL 24 cm, SCW 13 cm, ID/NE 14: SCL 19 cm, CCL 21.5 cm, SCW 11.8 cm, ID/NE 15:SCL 19.5 cm, CCL 23 cm, SCW 12.2 cm, ID/NE 16:24.7 cm, CCL 28 cm, SCW 15.2 cm, ID/NE 17:SCL 22.4 cm, CCL 25.6 cm, SCW 13.7 cm, ID/NE 07, plastron only (notch-notch) 18.3 cm; greatest length 19.7 cm. All collected by me between January and February, 1988.

Smith (1931) gave the distribution of *Geoclemys hamiltonii* as from 'Sind to Bengal'. Vijaya (1983) extended the range of the species into Assam, based on photographs of the species taken at Kaziranga. Most of the material reported herein were collected as shells discovered in the vicinity of forest camps, where the turtles were eaten by the human inhabitants. Exceptions include ID/NE 14, a complete articulate skeleton of a female from the bank of Barbeel besides ID/NE 10 and 15, both males, from Mehrbeel and Barbeel respectively, caught in tangle nets set among reed clumps.

The only other locality in Assam from where the species is known is Sonarpur, Kamrup district, (ZSI 18339) collected by L.W. Middleton. At ZSI/ER, a large but poorly preserved and uncatalogued example of the species was seen, which was collected from the West Khasi hills of Meghalaya (Ranikor) by V.T. Darlong on 10 February 1987.

The present records confirm the occurrence of *Geoclemys hamiltonii* in northeastern India.

6. **Brown roofed turtle** *Kachuga smithii* (Gray 1863)

Moll (1987) recently reviewed the biology and distribution of the small riverine species and described a new subspecies, *pallidipes*. During the present investigations, a single example of *K. smithii* was seen at Manas, which was locally acquired by Mr. S.K. Sarma. The dark pigmented limbs and head and large black blotches on the plastron keys this out as the nominate form, *smithii*

Rivers Indus and Ganga are included in the range of the species in general works (Das 1985, Pritchard 1979, Smith 1931), as Chaudhury (1912) in his account of the turtles of the Brahmaputra was not clear whether the brown roofed turtle does in fact occur in this river. Iverson's (1986) distributional map for the species shows a locality in the Brahmaputra, and this is based on the MHNG record cited below (Iverson, pers. comm.): MHNG 1185.27, from Kaziranga; MHNG 1240.55 listed as from the north bank of the Brahmaputra, in the Jorhat area. Since the city of Jorhat is situated in the south bank, the collection locality is presumably opposite Jorhat, across the Brahmaputra, the collection locality is presumbaly across the river, north of Jorhat.

7. **Assam roofed turtle** *Kachuga sylhetensis* (Jerdon 1870)

Material: 1 example, from Kolathua village, Sibsagar district, Assam. ZSI/ER VI/8139 : SCL 7.2 cm., CCL 8.8 cm., SCW 6.0 cm. Collected by J.P. Sati, 12 June 1981.

Moll (1987) in his recent review of *K. sylhetensis* had listed specimens from Cherrapunji (Khasi hills) and Garo hills of Meghalaya and Cachar district of Assam, in India besides the Khasi hills of Sylhet district of Bangladesh, based on material in the BM(NH) and ZSI collections.

The referred material from Sibsagar district in the southern bank of the Brahmaputra, central Assam, extends the range of the species by over 250 km to the north.

In addition, an example of the present species was seen in the collection of Mr. S.K. Sarma in Manas, which was collected from the Rupahi Bhumuk, a perennial stream within the Tiger Reserve. This is the first record of the species from the north bank of Brahmaputra.

8. **Indian tent turtle** *Kachuga tentoria* (Gray 1834)

Material: 3 shells, from Gobrai, Kaziranga National Park, Golaghat district, Assam. ID/NE 11: SCL 5.9 cm, CCL 7.7 cm, SCW 4.8 cm. ID/NE 12: SCL 7.1 cm, CCL 8.1 cm, SCW 5.8 cm. ID/NE 13: SCL 8.6 cm, CCL 9.8 cm, SCW 6.7 cm. All collected by the author in February, 1988.

Moll (1987), in his most recent review of the subgenus *Pangshura*, included the Ganga, Mahanadi, Godavari and Krishna drainages in the distribution of *Kachuga tentoria*, in its 3 subspecies, *tentoria*, *circumdata* and *flaviventer*.

Besides the Kaziranga material referred to, a living juvenile of the present species was seen at Manas, in the collection of Mr. S.K.Sarma. The dark plastral pattern, red markings on the head, black and cream striped rump and absence of pleuro-marginal ring identifies it as the nominate race, which was thought to be restricted to the rivers of peninsular India (Moll 1987).

A third locality for the species from the Brahmaputra is Sibsagar, from where Mr Anwaruddin Choudhury, Extra-Assistant Commissioner, Guwahati, photographed a juvenile which I have verified. It was reportedly found in a channel of the Brahmaputra after the floods in 1988.

These records comprise the first documentation of *Kachuga tentoria* from the Brahmaputra drainage, and puts Assam in the distribution of the species.

TESTUDINIDAE

9. **Asian brown tortoise** *Manouria emys* (Schlegel and Muller 1844)

Material: 1 carapace, from Umling village, Nongkhyllem Reserve Forest, East Khasi hills, Meghalaya. Reportedly from Lailad, north of the Nongkhyllem Wildlife Sanctuary: ID/NE 19: CCL *c.* 60 cm, CCW 54 cm. 1 plastron from Nongpoh village, East Khasi hills, Meghalaya. Reportedly from Borhulong, inside the Nongkhyllem Wildlife Sanctuary: ID/NE 20: notch to notch 35 cm, greatest length 40 cm. Both collected by me in June 1988. The above material constitutes the first record of the species, based on actual collection, from Meghalaya. Anderson (1871) noted that 3 examples of *Testudo phayrei* (now considered synonymous with the northern subspecies *Manouria emys phayrei*) were collected from the Cachar hills (Assam) and deposited at the Indian Museum, Calcutta. Subsequently, the Museum's Zoological collection was handed over to the ZSI. At present, there are 2 examples of *M. emys phayrei* from the Cachar hills in the said collection, ZSI 15545 and ZSI 20476, both collected by Maj. H.H. Godwin-Austin. These are apparently the specimens mentioned by Anderson (op.cit.), though the fate of the third is unknown, and it is presumably lost or destroyed.

The first volume of the register of the Asiatic Society of Bengal, now in the possesion of the ZSI, lists no fewer than 6 examples of *'Testudo phayrei'*. ZSI 901-904, are listed as collected from the Cachar hills by Maj. Godwin-Austin in January 1870; ZSI 900, for which no collection data (locality/collector/date) is available and ZSI 983, registered as from 'Assam' by Dr Anderson.

Jerdon (1870) wrote that the species is not uncommon in the hills of North Cachar, from where Godwin-Austin's specimens were obtained. The same authority stated, on information received, that the tortoise extends westwards to the Jaintia hills of what is now eastern Meghalaya. The two shells of *Manouria emys* from the Cachar hills that are currently at the ZSI, as well as the Nongkhyllem material, show characteristics of the northern subspecies, *phayrei*, whose known distribution encompasses northeastern India, Burma, northern and western Thailand, such as a brownish-black shell, small gulars and pectorals that are united. The southern subspecies, *emys*, from southern Thailand, Malaysia and Indonesia possesses a brownish shell, with large gulars and widely separated pectorals.

The Nonghkhyllem carapace (ID/NE 19) shows a hole in the 2nd and 3rd vertebrals, where the animal was burnt to kill it by the Khasia tribals, from whom the carapace was obtained.

Smith (1931) gave the distribution of the species (as *Testudo emys*) in India as 'Assam (Cachar, Naga Hills)'. While the Cachar hills record is supported by the museum specimens cited earlier, the report from the Naga hills is not, and is probably based on Anderson (1872 b) who wrote on a collection of both *'Testudo phayrei'* and *'Manouria emys'* from Lumajooting in the Naga hills, presently in the state of Nagaland. However, Anderson (op.

cit.) believed the two to be indistinct, admitting after a lengthy discussion that 'beyond the variation of the pectorals, they presented no other points of difference'.

One of the five tortoises from the above mentioned locality did possess pectorals that are separated, a character thought to differentiate *Manouria emys emys* from *M. emys phayrei*, suggesting that the 'southern' subspecies *emys*, occurs within Indian limits.

Elsewhere (Das 1985), I have included Manipur in the distribution of the species, and this is based on information provided by the herpetologist, Mr. S. Biswas (pers. comm.), previously of the ZSI and is not supported by a museum specimen. The Nongkhyllem record is the first record of the species from the country in over 100 years, and an extension of range by 100+ km to the northwest.

TRIONYCHIDAE

10. **Indian flapshell turtle** *Lissemys punctata* (Lacepede 1788)

Material: 1 example from Barbeel, Kaziranga National Park, Golaghat district, Assam. ID/NE 03: SCL 27 cm, CCL 31 cm, CCW 29.5 cm. Collected by the author in January, 1988. 1 example from Ranikor, West Khasi hills, Meghalaya. ZSI/ER VI/8390: CCL 29.1 cm, CCW 24.1 cm. Collected by V.T. Darlong and party, 10-2-1987.

Distributed in Pakistan, northern India, Nepal, Bangladesh and south-western Burma the northern subspecies of *Lissemys punctata punctata* was considered the forma typica, till Webb (1980) showed that the trinomial *punctata* should be correctly applied to the southern subspecies, the *Lissemys punctata granosa* of Smith (1931) and Pritchard (1979) from peninsular India and Sri Lanka. This, amazingly enough, left no name for the widely distributed and familiar yellow-spotted northern subspecies, and Webb (op.cit.) proposed the name *andersoni* for it.

Smith (1931) remarked that the northern subspecies has not been recorded from Assam. Nearly half a century later, Talukdar (1979) reported on a collection of a specimen belonging to this species from Munnabeel, Kaziranga National Park, Assam. Recently, I had the opportunity to verify the material, ZSI/ER VI/500. In addition, one more example (cited above) was collected by me during field work from the same general area. Yet another example from northeastern India examined, ZSI/ER VI/8390, was collected from the West Khasi hills of Meghalaya, close to the Assam border, and is the first record of the species from the state. These material indicate that *Lissemys punctata* is widespread in the Brahmaputra drainage.

I tentatively assign all three examples referred above to *Lissemys punctata andersoni*, as these possess yellow- blotched heads and carapaces. The comparative sizes of the entroplastral callosities which had been used by Smith (1931) in separating the subspecies are highly variable in size even within a single form, sometimes being absent altogether, and this is therefore not a good taxonomic character.

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Dr. John B. Iverson, Earlham College, Indiana, sent lists of several species at the MHNG. Dr. John G. Frazier, Smithsonian Institution, Washington D.C., made me aware of J.A.'s comments on *Pyxidea mouhotii*.

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